

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Jeffrey Hubbell, Jason Schense, Andreas Zisch and Heike Hall

Serial No.: Continuation of 10/024,918      Art Unit: Not Yet Assigned

Filed: August 27, 2003      Examiner: Not Yet Assigned

For: *ENZYME-MEDIATED MODIFICATION OF FIBRIN FOR TISSUE  
ENGINEERING*

Assistant Commissioner for Patents  
Washington, D.C. 20231

**INFORMATION DISCLOSURE STATEMENT**

Sir:

Pursuant to 37 C.F.R. §1.56 and 37 C.F.R. §1.97, Applicants submit an Information Disclosure Statement, including eleven (11) pages of Form PTO-1449. All of the documents cited below were cited by or submitted to the Patent Office in Application Serial No. 10/024,918, filed December 18, 2001, to which the present application claims priority. Pursuant to 37 C.F.R. §1.98(d), Applicants are not enclosing copies of these publications. Copies will be provided upon request, however.

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U.S.S.N.: Continuation of 10/024,918  
Filed: August 27, 2003  
INFORMATION DISCLOSURE STATEMENT

### U.S. Patents

<u>Number</u>	<u>Issue Date</u>	<u>Patentee</u>	<u>Class/Subclass</u>
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### Foreign Documents

<u>Number</u>	<u>Publication Date</u>	<u>Patentee</u>	<u>Country</u>
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**Remarks**

This statement should not be interpreted as a representation that an exhaustive search has been conducted or that no better art exists. Moreover, Applicants invite the Examiner to make an independent evaluation of the cited art to determine its relevance to the subject matter of the present application. Applicants are of the opinion that their claims patentably distinguish over the art referred to herein, either alone or in combination.

Respectfully submitted,



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		Application Number	Continuation of 10/024,918
		Filing Date	August 27, 2003
		First Named Inventor	Jeffrey Hubbell
		Group Art Unit	
		Examiner Name	
Sheet	1	of	11
		Attorney Docket Number	CIT 2606 CIP CON

**U.S. PATENT DOCUMENTS**

## **FOREIGN PATENT DOCUMENTS**

FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office: <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
	WO	89/00051		Cytrix Biopool Ltd.	01-12-1989		
	WO	90/05177		Syntro Corporation	05-17-1990		
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		Filing Date	August 27, 2003
		First Named Inventor	Jeffrey Hubbell
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		Attorney Docket Number	CIT 2606 CIP CON

OTHER ART -- NON PATENT LITERATURE DOCUMENTS		
Examiner's Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published
		ADAMS, et al., "Roles of ephrinB ligands and EphB receptors in cardiovascular development: demarcation of arterial/venous domains, vascular morphogenesis, and sprouting angiogenesis," <i>Genes &amp; Development</i> 13:295-306 (1999).
		BAUMGARTNER, et al., "Constitutive expression of phVEGF <sub>165</sub> after intramuscular gene transfer promotes collateral vessel development in patients with critical limb ischemia," <i>Circulation</i> 97:1114-1123 (1998).
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		BLAESSE, et al., "Structural analysis of the sixth immunoglobulin-like domain of mouse neural cell adhesion molecule L1 and its interactions with α <sub>v</sub> β <sub>3</sub> , αIIbβ <sub>3</sub> , and α5β <sub>1</sub> integrins," <i>J Neurochem</i> 71:2615-2625 (1998).
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		CONOVER, et al., "Disruption of Eph/ephrin signaling affects migration and proliferation in the adult subventricular zone," <i>Nature Neuroscience</i> 3(11):1091-3324 (2000).	
		COOMBS, et al., "Directing Sequence-specific Proteolysis to New Targets," <i>Journal of Biological Chemistry</i> 273(8):4323-4328 (1998).	
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		EDELMAN, et al., "Controlled and modulated release of basic fibroblast growth factor," <i>Biomaterials</i> 12:619-626 (1991).	
		EDELMAN, et al., "Perivascular and intravenous administration of basic fibroblast growth factor: Vascular and solid organ deposition," <i>Proc. Natl. Acad. Sci USA</i> 90:1513-1517 (1993).	

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		Filing Date	August 27, 2003
		First Named Inventor	Jeffrey Hubbell
		Group Art Unit	
Sheet	4	of	11
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		EDGAR, et al., "The heparin-binding domain of laminin is responsible for its effects on neurite outgrowth and neuronal survival," <i>EMBO Journal</i> 3(7):1463-1468 (1984).	
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		FOLKMAN, "Angiogenesis in cancer, vascular , rheumatoid and other disease," <i>Nature Medicine</i> 1:27-31 (1995).	
		GALE, et al., "Ephrin-B2 selectivity marks arterial vessels and neovascularization sites in the adult, with expression in both endothelial and smooth-muscle cells," <i>Developmental Biology</i> 230:151-160 (2001).	
		GÖTZ, et al., "Neurotrophin-6 is a new member of the nerve growth factor family," <i>Letter to Nature</i> 372:266-269(1994).	

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		GRIESLER, et al., "Enhanced endothelial of expanded polytetrafluoroethylene grafts by fibroblast growth factor type 1 pretreatment," <i>Surgery</i> 112:244-255 (1992).
		HALL, "Molecular properties of fibrin-based matrices for promotion of angiogenesis in vitro," <i>Microvascular Research</i> 62:315-326 (2001).
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		HUBBELL, "Bioactive biomaterials," <i>Curr Opin Biotech</i> 10:123-129 (1999).
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		LEE, et al., "Analysis of affinity and structural selectivity in the binding of proteins to glycosaminoglycans: Development of a sensitive electrophoretic approach," <i>Biochemistry</i> 88:2768-2772 (1991).	
		LIN, et al., "Purification and Initial Characterization of Rat B49 Glial Cell Line-Derived Neurotrophic Factor," <i>Journal of Neurochemistry</i> 758-768 (1994).	
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		MONTGOMERY, et al., "Human neural cell adhesion molecule L1 and Rat homologue NILE are ligands for integrin $\alpha_1\beta_3$ ," <i>J Cell Biol</i> 132:475-485 (1996).	
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		RUOSLAHTI & ENGVALL, "Perspectives series: Cell adhesion in vascular biology," <i>J Clin Invest</i> 99:1149-1152 (1997).
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		SHIREMAN, et al., "Modulation of vascular cell growth by local cytokine delivery from fibrin glue suspensions," <i>J Vasc Surg</i> 19:852-62 (1999).

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		SHUMACHER, et al., "Induction of neoangiogenesis in ischemic myocardium by human growth factors," <i>Circulation</i> 97:645-650 (1998).
		SMITH, et al., "Rapid Identification of Highly Active and Selective Substrates for Stromelysin and Matrikain Using Bacteriophage Peptide Display Libraries," <i>Journal of Biological Chemistry</i> 270(12):6440-6449 (1995).
		SPILLMAN, et al., "Defining the Interleukin-8-Binding Domain of Heparan Sulfate," <i>Journal of Biological Chemistry</i> 273(25):15487-15493 (1998).
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		STUDIER, et al., "Use of T7 RNA Polymers to Direct expression of Cloned Genes," <i>Methods in Enzymology</i> 185:60-89 (1990).
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		TAKESHITA, et al., "Therapeutic Angiogenesis. A single intraarterial bolus of vascular endothelial growth factor augments revascularization in a rabbit ischemic hind limb model," <i>J Clin Invest</i> 93:662-670 (1994).
		TASHIRO, et al., "A Synthetic Peptide containing the IKVAV Sequence from the A Chain of Laminin Mediates Cell Attachment, Migration, and Neurite Outgrowth," <i>Journal of Biological Chemistry</i> 264(27):16174-16182 (1989).
		TESSLER, et al., "Heparin Modulates the Interaction of VEGF 165 with Soluble and Cell Associated flk-1 Receptors," <i>Journal of Biological Chemistry</i> 269(17):12456-12461 (1994).

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		THOMPSON, et al., "Site-directed neovessel formation in vivo," <i>Science</i> 241:1349-1352 (1988).
		TYLER-CROSS, et al., "Heparin binding domain peptides of antithrombin III: Analysis by isothermal titration calorimetry and circular dichroism spectroscopy," <i>Protein Science</i> 3:620-627 (1994).
		WANG, et al., "Molecular distinction and angiogenesis interaction between embryonic arteries and veins revealed by ephrin-B2 and its receptor Eph-B4," <i>Cell</i> 93:741-753 (1998).
		WEATHERFORD, et al., "Vascular endothelial growth factor and heparin in a biologic glue promotes human aortic endothelial cell proliferation with aortic smooth muscle cell inhibition," <i>Surgery</i> 433-439 (1996).
		YAMADA, "Adhesive Recognition Sequences," <i>The Journal of Biological Chemistry</i> 266(20):12809-12812 (1991).
		YANISH-PERRON, et al., "Improved M13 phage cloning vectors and host strains: nucleotide sequences of the M13mp18 and pUC19 vectors," <i>Gene</i> 33:103-119 (1985).
		ZUCKER, et al., "Platelet Factor 4: Production, Structure, and Physiologic and Immunologic Action," <i>Proceedings for the Society of Experimental Biology and Medicine</i> 198:693-702 (1991).

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